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CERATOPOGONIDAE

J. W. S. MACFIE



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5. CERATOPOGONIDAE

By J. W. S. MACFIE

With an Appendix by DR. B. DE MEILLON

(With Plates XXV and XXVI)

THE collection, which was made in the highlands of Kenya and Uganda, consists of 93 specimens procured by Dr. F. W. Edwards during the East African Expedition, 1934-1935, of the British Museum, and a few from other sources. All the specimens unless otherwise noted were collected by Dr. F. W. Edwards. It includes examples of 29 different species of which 15 are new so far as I can ascertain, namely: 3 *Forcipomyia*, 1 *Atrichopogon*, 1 *Clinohelea*, 1 *Sphaeromias*, 7 *Palpomyia*, 1 *Parrotia*, and one species for which it is necessary, I believe, to erect a new genus. Several of the new species have been named in honour of men famous in the history of the part of Africa in which they were found, namely John Hanning Speke and Sir Samuel Baker, Sir John Kirk, Sir H. M. Stanley, Joseph Thomson, Lord Lugard, Sir Gerald Portal, and Sir Harry Johnston.

The method of description used is the same as that I have employed in a number of recent reports. The unit of measurement used is approximately $3\cdot7 \mu$. All the types of the new species are in the collection of the British Museum (Natural History).

Pterobosca paludis Macfie

UGANDA: Fort Portal, 4.xii.1934, 4 ♀, "on wing of small Agrionine dragonfly."

This insect does not differ in any important respect from British specimens of *P. paludis*. If there are any differences they are that the basal segments of the antennae are rather shorter and more clearly disc-shaped, the combined lengths of segments 3-9 and 10-15 being about 35 and 114 units respectively, and that there are more distinct bare areas along the veins of the wings. These small differences are probably not of specific importance, and the insect is therefore referred to the species *P. paludis* pending further study. It is of course possible that males when procured may show differential characters.

Recently (1937) da Costa Lima has described a South American species, *P. macfieei*, which also is closely related to *P. paludis*. Thanks to Dr. da Costa Lima's courtesy I have been able to compare a specimen of his species with *P. paludis* and with the Uganda specimens referred to above. In da Costa

Lima's species the claws are stouter and more deeply cleft (as shown in his excellent figure), and there are distinct bare areas along the veins of the wings. The combined lengths of segments 3-9 and 10-15 of the antennae are about 42 and 104 units respectively. It is clearly a distinct species.

Forcipomyia ingrami Carter

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♂.

Forcipomyia (?) lepidota Ingram & Macfie

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♀.

As this specimen is a female it cannot be precisely identified. Several species of *Forcipomyia* with similar adornment of the wings have been described, some of them so closely allied that the females are almost if not quite indistinguishable. This specimen is perhaps *F. lepidota*, but without males the identification cannot be confirmed.

Forcipomyia iphias de Meillon

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 1 ♂, and 10,200 ft., 13 ♂ 9 ♀ "bred from larvae found inside hollow stem of *Lobelia bequaertiana*"; and Kilembe, 4500 ft., 1 ♂, 2 ♀.

This is an almost black species with a single pale spot about the middle of the anterior border of the wing, without scales or modified spines, and with the T.R. about 1. Only the male was previously known. The characters of the female are as follows.

♀. Length of wing about 2 mm., greatest breadth about 0.8 mm.

Head almost black. Palpi very dark brown, the third segment much inflated at base and with a deep pit: lengths of last three segments about 36, 18, and 16 units respectively. Antennae blackish: segments 4-14 forming an almost continuous series with only a slight change of shape between 10 and 11, the basal segments armed with almost colourless spines which are rather thick and not very sharply pointed. Segments 4-10 measuring in one specimen from about 17 by 12 to 15 by 10 units; 11-14 sub-equal, about 16 by 10 units; 15 about 26 (including stylet of about 3 units) by 10 units. The combined lengths of segments 3-10, 4-10, and 11-15 about 131, 112, and 91 units respectively.

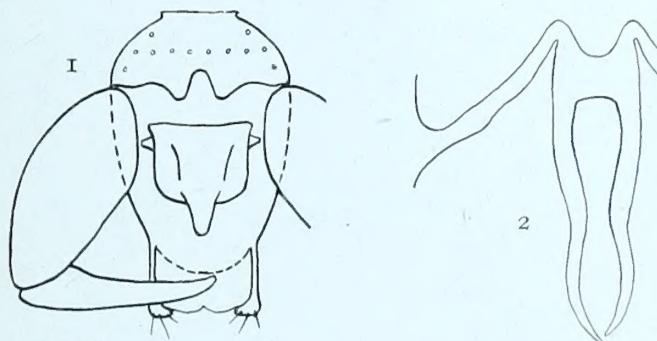
Thorax when dry almost black and often shiny, when in fluid showing the usual antero-posterior bands, which are very dark brown, and paler areas at the shoulders and immediately in front of the scutellum. Scutellum almost black, bearing numerous bristles and hairs.

Wings dark, densely clothed with macrotrichia especially near the anterior margin, but without scales. About middle of anterior border is a small white

or yellowish spot which covers the distal extremity of the second radial cell. Fork of Cu at about the same level as end of costa. First radial cell obliterated, second small but well formed. Halteres with white or cream-coloured knobs.

Legs almost uniformly very dark brown, the tarsal segments as dark as the others, but the femora not quite so dark. Bristles and hairs numerous, but no scales and no modified spines. Form of segments, claws, and empodium normal. T.R. almost 1.

Abdomen blackish, hairy, without scales. Spermathecae 2, highly chitinized, oval, sub-equal, about 100–120 μ by 60–70 μ , the duct chitinized for only a short distance, about 4 μ .



Figs. 1 and 2.—*Forcipomyia iphias* de Meillon.

(1) Ventral view of hypopygium; (2) harpes (at a greater magnification).

Many very dark brown or blackish species of *Forcipomyia* have as their most conspicuous feature a single pale spot about the middle of the anterior border of the wing. It is quite impossible to distinguish these species without a comparison of anatomical details, the most important of which are perhaps those of the hypopygium, and especially the harpes or parameres. It is greatly to be regretted therefore that many descriptions have been published without such details, because many of the species to which they refer must inevitably go to swell the already great number which are unrecognisable because insufficiently described. I have determined these insects from Uganda as *F. iphias*, a species taken in Zululand, after comparing a male from each locality. There are indeed certain small differences between them, but I do not think they can be considered of specific importance. In the Uganda specimen the hypopygium appears in ventral view as shown in the figures (Figs. 1 and 2). It is very dark brown, the claspers as dark as the rest. The ninth sternite is notched in the middle line posteriorly as it is also in the Zululand specimen. The harpes taper distally, but their ends are not filiform. They are curved, and rather less sharply pointed in the Uganda specimen than they are in the one from Zululand, and

have a notch at the base, where they are fused, which is not present in the latter. The aedeagus is shield-shaped, with strong basal processes which under pressure expand to form a wide arch; the membrane joining it to the ninth sternite is not spiculate.

The species resembles in many ways *F. nigerrima* Goet. which at first (1933) was said to have the wing "sans tache blanche", but later (1935) "avec une petite tache blanche". Goetghebuer gives no description of the hypopygium. He states, however, that the antenna in the male has segment 12 only slightly longer than 13, and in the female has the combined-lengths of segments 3-10 about equal to that of 11-15, differing notably in these details from *F. iphias*.

Forcipomyia notata sp. n.

A dark brown species with yellowish legs, and a small pale spot about the middle of the anterior border of the wing. Scales present, but narrow and inconspicuous. Tibiae spotted. T.R. about 0·4.

♂, ♀. Length of wing 1·2 to 1·5 mm., greatest breadth 0·4 to 0·5 mm. As is usual the wings of the male are longer and narrower than those of the female.

Head blackish. Palpi very dark brown, the third segment much inflated at base and with a deep, rounded pit: lengths of last three segments in both sexes about 22, 10, and 10 units respectively. Antennae brown or pale brown. In male segments 4-11 ranging from about 14 by 14 to 15 by 9 units; 12-14 elongate, their lengths about 68, 27, and 19 units; 15 about 25 units, including the stylet of about 3 units. In female segments 4-10 flask-shaped, bearing long curved spines the ends of which are not very sharp, measuring from about 20 by 10 to 16 by 8 units; 11-14 sub-equal, about 13 by 6 units; 15 (including stylet of about 3 units) about 20 by 6-7 units. The combined lengths of segments 3-10, 4-10, and 11-15 about 147, 127, and 72 units respectively.

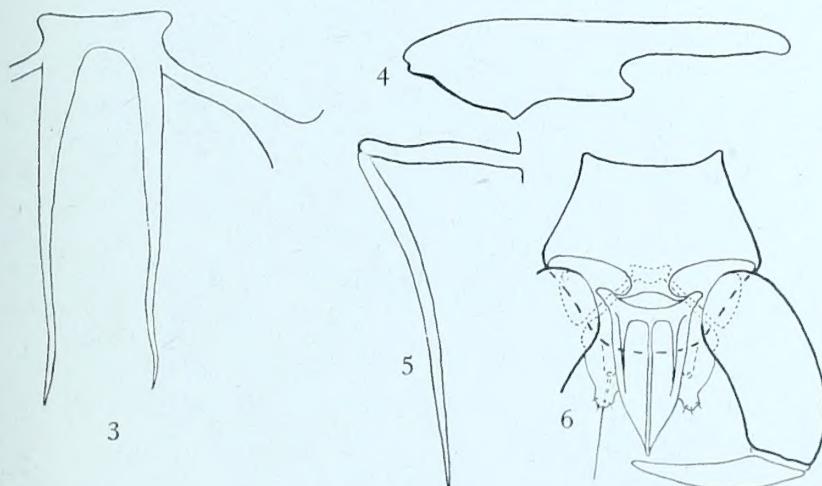
Thorax very dark brown or blackish. Scutellum blackish, bearing numerous bristles and hairs.

Wings well clothed with macrotrichia especially anteriorly, and with a quite small pale spot just beyond the end of the costa. Scales present in the radial area, but narrow and inconspicuous. First radial cell obliterated; second well formed, infuscated. The area of the second radial cell with its scales forms a dark patch which in the male is the most conspicuous feature of the wing. Fork of *Cu* in female just distal to level of end of costa, in male more distinctly distal. Halteres with pale, whitish knobs.

Legs yellowish, bearing long bristles, hairs, and also a few scales which, however, are difficult to see. Knees pale. Femora on four anterior legs with two small dark brown spots, the one near the base, and the other near the apex. Hind femora with a small dark brown spot near the base, and a broad dark

brown band just before the apex. All tibiae with small dark brown spots situated at the bases of the larger bristles. All tarsal segments somewhat infuscated at apex. T.R. about 0·4.

Abdomen in female uniformly dark brown above, spotted below. In male abdomen paler, tergites dark brown at base and sides only, and sternites with fewer spots. Spermathecae 2, highly chitinized, oval, sub-equal, about 70 μ by 50 μ ; practically no part of the duct chitinized. Hypopygium banded, ninth segment dark brown in middle, yellowish at base and apex, and side



Figs. 3-6.—(3) *Forcipomyia notata* sp. n. Ventral view of harpes; (4 & 5) *Forcipomyia lugardi* sp. n. Clasper, and one harpe; (6) *Forcipomyia stanleyi* sp. n. Ventral view of hypopygium.

pieces with a dark band about the middle. Ninth segment of usual form, sternite bearing numerous bristles. Side pieces and claspers normal, the latter pale, yellowish. Harpes (Fig. 3) long tapering blades united by a band at the base. Aedeagus of the usual shield form, the membrane joining it to ninth sternite not spiculate.

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♂, 1 ♀.

Forcipomyia lugardi sp. n.

A very dark brown species with the four anterior legs yellowish, and the hind legs with the distal halves of the femora and the entire tibiae very dark brown. T.R. not quite 1.

♂. Length of wing about 1·2 mm., greatest breadth about 0·37 mm.

Head blackish. Palpi blackish, the third segment long, sub-cylindrical,

with a small pit in distal third: lengths of last three segments about 32, 11, and 13 units respectively. Antennae missing.

Thorax and scutellum blackish.

Wings unadorned, well clothed with macrotrichia of which those on the radial area are darker than the rest and distinctly scale-like. Venation normal. Fork of *Cu* only slightly distal to level of end of costa. Halteres with whitish knobs.

Legs with four posterior coxae and all trochanters dark brown. Four anterior legs otherwise almost uniformly yellowish brown. Hind legs with distal halves of femora and entire tibiae very dark brown. Terminal segments of tarsi on all legs a little infuscated. T.R. not quite 1. Claws and empodium normal.

Abdomen very dark brown or blackish excepting the inter-segmental zones at the base which are paler, yellowish. Hypopygium blackish. Ninth sternite bearing numerous bristles, somewhat produced posteriorly and with a notch in the middle line. Side pieces long and narrow. Claspers (Fig. 4) very dark, with a deep notch. Harpes (Fig. 5) slender tapering rods which are not united at the base by any band. Aedeagus of the common shield-like shape, the narrow distal extension rather long and bent ventrally.

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♂.

This insect is described, although it is incomplete, because it should be easy to recognize by the adornment of the hind legs and the unusual form of the claspers.

Forcipomyia stanleyi sp. n.

A brown species without scales, with unadorned wings, yellowish legs, and the abdomen somewhat banded; resembling in some respects *F. ingrami* Carter, but with notable differences in the form of the palps and hypopygium.

♂. Length of wing about 1·3 mm., greatest breadth about 0·3 mm.

Head very dark brown. Eyes bare. Palpi dark brown, the third segment slightly inflated, not drawn out distally, with a deep pit in its anterior third: lengths of last three segments about 18, 10, and 7 units respectively. Antennae darkish brown with an ample plume, torus much darker than the flagellar segments: segments 4-11 ranging from about 11 by 11 to 14 by 7 (maximum) units; 12-15 about 48, 24, 17, and 26 (including stylet of about 4 units) units respectively.

Thorax dark brown, but with paler areas in the middle and at sides of scutum. Scutellum dark brown.

Wings unadorned, well clothed with macrotrichia but without scales. Venation as in *F. ingrami*. Halteres with white knobs.

Legs pale, yellowish, the tarsal segments slightly darker than the rest. First two tarsal segments of forelegs with a conspicuous longitudinal row of

spine-like bristles. Form of segments, claws, and empodium normal. No scales. First tarsal segment on hind legs a little thickened and bearing some strong spine-like bristles. T.R. about 0·9.

Abdomen darkish brown, the basal segments paler, yellowish, at apex thus producing a banded appearance. Hypopygium with ninth segment and side pieces very dark brown, claspers paler. Ninth sternite bearing numerous bristles (not shown in figure). Hypopygial structures (Fig. 6) similar to those of *F. ingrami*, but ninth sternite somewhat produced in middle line posteriorly and branching, and aedeagus longer and tapering posteriorly to a point.

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♂.

One of two females in the collection, the one taken at Kalungi Swamp, 12.xi.1934, and the other at Fort Portal, 4.xii.1934, may belong to this species, but they are not alike, and as it is impossible to decide which (if either) should be associated with this male, their description is deferred until further material is available for study.

Lasiohelea lefanui Carter

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♀; Kigezi District, Kanaba, 7800 ft., 1 ♀ taken biting.

The latter insect is much the darker and may be a distinct form.

Apelma bacoti Ingram & Macfie

UGANDA: Fort Portal, 29.viii.1931, 2 ♂; 25.ix.1931, 2 ♂; and xi.1931, several specimens of both sexes, "from axils of wild banana plants in the region of Fort Portal." Kampala, viii.1931, several specimens of both sexes. (*Gibbins*).

The female, which has not previously been collected, is similar to the male, excepting in the following details. Antennae very dark brown: segments 4-10 from disc-shaped to nearly spherical, in one specimen measuring from 5 by 8 to 6 by 7 units; 11-15 longer, sub-cylindrical, 11-14 sub-equal, about 13-15 by 6-7 units, 15 about 24 (including stylet of about 3 units) by 7 units. The combined lengths of segments 3-10, 4-10, and 11-15 about 46, 38, and 70 units respectively. Wings rather broader, about 1·2 mm. by 0·4 mm. Fork of *Cu* slightly proximal to level of end of costa. Legs similar, but empodium normal. L.R. about 2·6 (in male about 3). Spermatheca single, highly chitinized, oval, about 55 μ by 45 μ ; the duct hardly at all chitinized at its commencement.

Among the specimens from Kampala are several females with abnormal antennae similar to those described by De Meillon (1930) as occurring in the species which he named *Lasiohelea natalia*, which is, I believe, an *Agromyzid*. These females are almost indistinguishable from females of *A. bacoti*, but have two spermathecae.

Atrichopogon hirsutipennis Ingram & Macfie

KENYA: Aberdare Range, Mt. Kinangop, 8000 ft., x.1934, 3 ♀, one labelled “*Senecio brassicaeformis* or *Senecio aberdarica*” (Ford).

UGANDA: Ruwenzori, Fort Portal, 4.xii.1934, 1 ♂.

Atrichopogon kelainosoma Ingram & Macfie

UGANDA: Ruwenzori, Mobuku Valley, 7300 ft., 1 ♂.

This insect is probably the same as the West African species named *A. kelainosoma*, but there are small points of difference, e.g. in the palps and antennae, and the diagnosis requires confirmation.

Atrichopogon natalensis Ingram & Macfie

UGANDA: Budongo Forest, 7.ii.1935, 9 ♀.

These insects are probably *A. natalensis*, but the wings bear rather more numerous macrotrichia than are shown in the figure of the wing of that species (but not so many as in *A. hirsutipennis*), extending almost to the fork between the branches of *M*, and reaching in a double line almost to the base between *M* and *Cu*.

Atrichopogon stannusi Ingram & Macfie

UGANDA: Budongo Forest, 7.ii.1935, 1 ♂, 1 ♀.

Atrichopogon bakeri sp. n.

An almost black species with uniformly very dark brown legs, almost black halteres, and wings bearing macrotrichia at their tips.

♂. Length of wing about 1·6 mm., greatest breadth about 0·5 mm.

Head almost black. Eyes densely hairy. Palpi almost black, short, the third segment slightly inflated about the middle, with a deep pit, and the fifth nearly conical: lengths of last three segments about 13, 10, and 9 units respectively. Antennae almost black, plume not large, the hairs paler at tip: segments 4–11 ranging from about 14 by 11 to 12 by 7 units, each bearing a whorl of hairs; 12 about 15 by 6 units, also with a whorl; 13–15 more elongate, without whorls, about 19, 20, and 30 (including stylet of about 3 units) by 6–7 units respectively.

Thorax almost black, with a small clear area on each side just before the scutellum as in *A. hirsutipennis*. Scutellum almost black, bearing 2 centro-marginal bristles and about 6 small hairs.

Wings brownish, unadorned. Macrotrichia scanty, a few scattered at tip in cell *R*5 and near periphery between branches of *M*, and one or two at distal

ends of M_1 and M_2 . Costa extending nearly two-thirds length of wing. First radial cell a mere slit; second well formed. Proximal ends of branches of M indistinct, but petiole apparently a little shorter than cross-vein. Fork of Cu at about same level as base of second radial cell; its branches forming an angle less than a right-angle. Halteres with blackish knobs.

Legs uniformly very dark brown, blackish. Form of segments, claws, and empodium normal. T.R. about 2·8.

Abdomen almost black. Hypopygium in ventral view (and before permanent mounting which may cause some distortion) as shown in the figure (Fig. 7). The aedeagus is a very complex structure inadequately shown in the

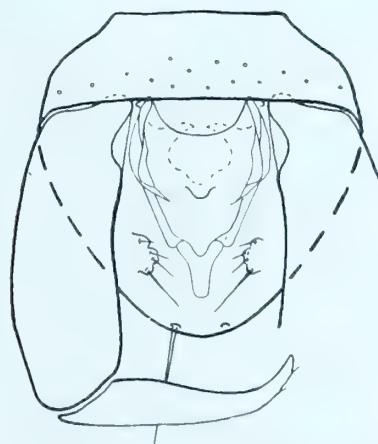


Fig. 7.—*Atrichopogon bakeri* sp. n.
Ventral view of hypopygium.

sketch: in general characteristics it is similar to that of *A. hirsutipennis*. Ninth sternite not excavated in middle line posteriorly, bearing a number of bristles; membrane joining it to aedeagus not spiculate. Side pieces rather long and narrow; claspers very dark.

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 2 ♂.

This insect resembles in some respects *A. hirsutipennis* Ingram & Macfie, but the eyes are much more densely hairy, and the legs much darker brown.

At least 38 species of the genus *Atrichopogon* (including *Kempia*) have been described from the Ethiopian region including those found in Egypt and Ethiopia (Abyssinia), but excluding those found in Tunis and Algeria. One species, *A. breccellula* K., differs from all the others in having the second radial cell shorter than the first, and two, *A. quadrisetosus* Goet. and *K. bisetosa* Goet., are peculiar in having harpes in the hypopygium. These species should probably

be excluded from the genus. Several species have been so briefly described that it is impossible to distinguish them from others which have been found in the same regions, in a few cases nothing beyond generic characters being given, and it is probable that some have received more than one name.

Culicoides grahami Aust.

UGANDA: Ruwenzori, Mobuku Valley, 7300 ft., 1 ♀, and Fort Portal, 4.xii.1934, 1 ♀. 1

Culicoides milnei Aust.

KENYA: Aberdare, Mt. Kinangop, 8000 ft., x.1934, 1 ♀, "light trap."

Ceratopogon (?) ornatipennis de Meillon

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 1 ♀.

This insect is apparently the same as that found by De Meillon in Zululand, and described in the appendix to this report. A comparison¹ of the wings shows no appreciable differences; the markings form exactly the same pattern, the pale areas being merely somewhat more sharply defined in the Ruwenzori specimen. Assuming the two to be conspecific, one or two points may be added to the description which De Meillon has given. The wings are in fact densely clothed with microtrichia, but they are small, not so large as those of *Culicoides*, and more erect. The claws on the four anterior legs have each a small basal barb. On the ventral aspect of the abdomen, just anterior to the vulva, are three antero-posterior rods of chitin linked together by a broader transverse band. The whole segment is, indeed, especially chitinized. In the specimen examined by me the chitinized portion of the duct of the spermathecae was somewhat shorter than that measured by De Meillon, its length being about 14 μ instead of 24 μ . The wing and abdomen of the Uganda specimen are illustrated in Fig. 12 a and b.

The fact that the second radial cell of the wing is unformed is not, of course, without parallels. Several species of *Culicoides* show this peculiarity, for example, *C. kingi* Aust. and *C. schultzei* (End.). One species which possesses this character, *C. imperfectus* Goet., may perhaps be a species of *Alluaudomyia*. It is to the latter genus I would have assigned this insect from Uganda; but Dr. De Meillon, who has had the advantage of studying more abundant material, including males of an allied species which (if not intersex forms) have remarkable antennae, prefers to refer it to a new sub-genus of *Ceratopogon*.

¹ We are indebted to Dr. De Meillon for kindly sending a wing of one of his specimens for this comparison.

Dasyhelea nyasae Ingram & Macfie

UGANDA: Omubalamu, 25.x.1931, 1 ♂, 1 ♀; near Fort Portal, "from shallow rock hole containing much debris at summit of Mt. Njara, 5100 ft." 26.xi.1931, about a dozen of each sex; and "from axils of wild banana plants in the region of Fort Portal," xi.1931, several of both sexes. (*Gibbins.*)

These specimens differ from typical examples in having the legs much less distinctly banded, the femora and tibiae in many of them being almost uniformly darkish brown. As the spermatheca of the female, and the hypopygium of the male are typical, there does not appear to be sufficient reason for regarding them as more than a variety of *D. nyasae*.

Clinohelea lacustris sp. n.

A dark amber brown species with the wings adorned as shown in the diagram.

♀. Length of wing about 2·6 mm., greatest breadth about 0·8 mm.

Head dark amber brown. Palpi brown at base, very dark brown at apex, the third segment but little inflated, without a definite pit: lengths of last three segments about 23, 19, and 40 units respectively. Antennae dark brown, but segments 4-10 pale brown at bases: 4-10 cylindrical, measuring from about 33 by 7 to 35 by 6 units, 11-14 sub-equal, about 58-60 by 5-6 units, 15 about



Fig. 8.—*Clinohelea lacustris* sp. n.
Wing of female to show adornment and venation.

71 by 5-6 units, attenuated at apex, but without definite stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 203, 238, and 365 units respectively.

Thorax very dark amber brown, shining, with few bristles or hairs. There is a small, pointed, anterior tubercle. Scutellum not so dark as the scutum, with 4 conical processes, and bearing also a few small hairs.

Wings with adornment as shown in the diagram (Fig. 8); without macrotrichia. Venation as shown in the diagram. Costa with few hairs which are rather widely spaced. Fringe short, the hairs composing it at any particular

part all of about the same length. Halteres with a dark brown patch on the knob.

Legs dark amber brown, the femora and tibiae all more or less infuscated, and the last two segments of the tarsi almost black. Bristles and hairs short and scanty. Femora and tibiae of normal form, unarmed, and without modified spines. Fourth tarsal segment on four posterior legs deeply bilobed, each lobe armed apically with a strong blunt spine; on fore legs much less deeply bilobed and without such spines. Fifth tarsal segment inflated on fore legs; unarmed on all legs. Hind legs very long; T.R. about 3. Claws on fore legs equal; on four posterior legs very unequal.

Abdomen somewhat pedunculate, very dark brown above, paler below, almost devoid of bristles and hairs. Posterior extremity paler than the rest. Tergites of first six segments composed of two quadrangular plates with reticulated surfaces which are narrowly separated in the middle line. There are no gland rods. Spermathecae 2, very dark, sub-equal, oval, about 95 μ by 80 μ ; the duct narrow and chitinized at its commencement for a short distance, about 18 μ .

UGANDA: Lake Nabugabo, near Masaka, 13.xi.1934, 2 ♀.

This appears to be the first species of *Clinohelea* to be collected in Africa. The conical processes on the scutellum are unlike anything I have previously observed in any species of Ceratopogonid.

Sphaeromias kirki sp. n.

An almost black species with unadorned wings, all the femora armed with spines and the fifth tarsal segments with batonnets, and all the claws equal, rather large, and barbed.

♀. Length of wing about 4.5 mm., greatest breadth about 1.1 mm.

Head dark brown or blackish. Palpi blackish, the third segment not inflated, without pit; lengths of last three segments about 30, 18, and 20 units respectively. Antennae dark brown, the bases of segments 3 to 10 paler than rest, yellowish: 4-10 sub-cylindrical, ranging from about 21 by 7 to 24 by 6 units; 11-14 elongate, sub-equal, about 60-62 by 6 units; 15 about 64 by 5-6 units, without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 200, 155, and 304 units respectively.

Thorax almost black, shining. Anterior tubercle present, rudimentary. Scutellum almost black.

Wings brownish, especially anteriorly, without definite adornment; without macrotrichia. Costa extending about five-sixths length of wing, terminating slightly proximal to level of end of M_2 . Both radial cells well formed: first almost triangular, second about three times as long as first. Cross-vein short. Fork of M proximal to cross-vein, the distance from it to the cross-vein about

three times the length of the cross-vein. Fork of Cu slightly distal to the level of fork of M . Halteres with almost black knobs.

Legs with femora and tibiae almost black (slightly less dark on fore legs), and tarsi yellowish brown but with the terminal segments more or less infuscated. All femora armed with rather small black spines, about 10 on fore, 7 on middle, and 2 on hind legs. Form of segments normal. All legs with fourth tarsal segment short but not distinctly cordiform or bilobed, fifth armed with about six pairs of black batonnets, and claws rather large (about three-quarters length of last tarsal segment), equal, and barbed. T.R. about 3.

Abdomen blackish; without gland rods. Spermathecae 2 (and a rudimentary third), highly chitinized, oval, not quite equal, measuring in one specimen about 137μ by 111μ and 111μ by 92μ respectively: the commencement of the duct chitinized for only a short distance, about 9μ .

KENYA: Chania Falls, 4000 ft., x.1934, 2 ♀.

Palpomyia Mg.

The following key may facilitate the recognition of the seven species of *Palpomyia* described in this report. In it are included, I think, all the species of this genus which have been described as occurring in this region and have the fourth tarsal segment cordiform, the fifth unarmed, the claws all equal, and at least some of the femora armed. Owing to the brief descriptions given of some species it is difficult to place them in the key, and it has been necessary to distort it inconveniently in order to include them at all.

- | | | |
|-----|----------------------------------------------------------------------------------|--------------------------------------------------|
| 1. | Mesonotum very dark brown or black | 2. |
| | Mesonotum "gris clair, mat, avec des bandes gris foncé" | <i>longicosta</i> Goet. |
| 2. | Wings adorned | 3. |
| | Wings unadorned | 4. |
| 3. | Wings with a dark patch about the middle | <i>pistiae</i> I. & M. |
| | Wings with a diffuse dark patch in distal part of cell R_5 | <i>kilembe</i> sp. n. |
| 4. | Only the fore femora armed | 5. |
| | All the femora armed | 8. |
| 5. | Hind femora with a dark brown band at apex | 6. |
| | Hind femora dull brown, darker at apex but without a definite band | <i>elgoni</i> sp. n. |
| 6. | Dark band on hind femora occupying distal quarter. Thorax dark brown | <i>portali</i> sp. n. |
| | Hind femora dark brown at tips only. Thorax blackish | 7. |
| 7. | Femora of fore legs much thickened, armed with about 13 spines | <i>thomsoni</i> sp. n. |
| | Femora of fore legs more slender, armed with 6-8 spines. Antennae long | <i>johnstoni</i> sp. n. |
| 8. | Fore femora dark brown | <i>ashanti</i> I. & M., <i>migrithorax</i> de M. |
| | Fore femora yellowish brown in part at least | 9. |
| 9. | Large species, length of wing about 4 mm. | <i>namwambae</i> sp. n. |
| | Smaller species | 10. |
| 10. | Hind tibiae yellowish brown, narrowly dark brown at base and apex | 0. |
| | Hind tibiae apparently otherwise adorned | <i>spinulosa</i> Goet. |

Palpomyia kilembei sp. n.

A very dark brown species with yellowish legs, the fore femora slightly thickened and armed with 6–7 spines, and the hind femora with a broad dark brown basal band.

♀. Length of wing about 2·9 mm., greatest breadth about 0·8 mm.

Head very dark. Palpi dark brown at tip, paler at base, the third segment not inflated, without a pit: lengths of last three segments about 26, 15, and 26 units respectively. Antennae dark brown, but with the bases of segments 3 to 10 paler, yellowish: 4–10 sub-cylindrical to vasiform, ranging from about 28 by 6–7 to 33 by 5–6 units; 11–14 elongate, sub-equal, 62–66 by 5–6 units;

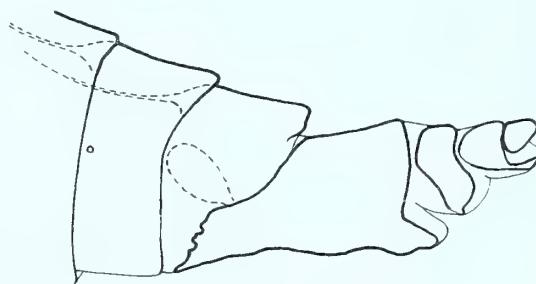


Fig. 9.—*Palpomyia kilembei* sp. n.
Posterior extremity of abdomen of female.

15 about 71 by 5–6 units, without stylet. The combined lengths of segments 3–10, 4–10, and 11–15 about 248, 205, and 324 units respectively.

Thorax almost black. Anterior tubercle small, blunt at tip. Scutellum almost black.

Wings with a diffuse dark patch occupying the distal part of cell *R*₅ from just before the end of the costa to the tip. No macrotrichia. Costa extending about four-fifths length of wing, terminating at a level about midway between the ends of *M*₂ and *Cu*₁. Both radial cells well formed: first rather narrow, triangular; second over twice as long as first. Fork of *M* well proximal to cross vein, the distance from it to cross-vein about twice length of cross-vein. Fork of *Cu* at about the same level as that of *M*. Halteres with blackish knobs.

Legs yellowish brown, with dark brown markings, and all knees and terminal tarsal segments dark brown. Coxae of fore legs yellowish, others dark brown. Femora on fore legs yellowish brown, slightly thicker than others, armed with 6–7 small spines; other femora unarmed, with a broad dark brown band at base which, however, is less distinct on middle legs than on hind pair. Tibiae on fore legs more or less infuscated, especially at extremities; on middle legs

with only extremities infuscated; on hind legs with base infuscated and with apical quarter very dark brown. T.R. about 2·5. On all legs fourth tarsal segment cordiform, fifth unarmed, and claws equal, small, without barbs.

Abdomen uniformly very dark above, and tip almost black. Eighth segment (Fig. 9) elongated, blackish, a complete ring of chitinization. Gland rods rather short, present on tergites 6 and 7, and with rudiments on 5. Spermatheca 2, highly chitinized, oval, large, sub-equal, about 170 μ by 100 μ ; only the very commencement of the duct chitinized.

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♀.

Palpomyia portali sp. n.

A dark brown species with infuscated but otherwise unadorned wings, only the fore femora armed, and the hind legs with the tibiae and the distal quarter of the femora very dark brown.

♀. Length of wing about 3·5 mm., greatest breadth about 1 mm.

Head very dark brown. Palpi blackish, the third segment not inflated, without a pit: lengths of last three segments about 28, 16, and 25 units respectively. Antennae dark brown, but bases of segments a little paler than rest, and torus reddish brown: 4-10 sub-cylindrical, slightly narrowed near apex, measuring from about 21 by 7-8 to 23 by 6-7 units; 11-14 cylindrical, sub-equal, about 47-53 by 6-7 units; 15 about 69 by 7 units, without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 189, 154, and 271 units respectively.

Thorax very dark brown or blackish, often shining. Anterior tubercle present, but in some specimens quite rudimentary and only visible with the aid of a microscope. Scutellum very dark brown or blackish, bearing a number of bristles and hairs.

Wings brown, especially anteriorly and at tip, but without distinct adornment; without macrotrichia. Costa extending about four-fifths length of wing, terminating a little proximal to level of end of M_2 . Both radial cells well formed: first broadest at base, almost triangular; second over twice as long as first. Cross vein short. Fork of M some distance proximal to cross-vein, the space between the point of forking and the cross-vein about three times the length of the cross vein. Fork of Cu almost at same level as fork of M . Halteres with dark brown knobs.

Legs yellowish brown, with dark brown markings and knees; bristles and hairs scanty. Coxae of fore legs yellowish brown, the others dark brown. Femora on fore legs a little thicker than others, almost entirely yellowish brown; armed with about 10 spines; on other legs mainly yellowish brown but with a dark brown band occupying the distal quarter, unarmed. Tibiae on four anterior legs mainly yellowish brown, but dark brown at extreme base and

apex; on hind legs entirely dark brown, but darker at apex than at base. T.R. a little over 2. Tarsal segments on all legs more or less infuscated, on hind legs entirely very dark brown. All legs with fourth tarsal segment cordiform, fifth unarmed, and claws small, equal, and apparently without barbs.

Abdomen darkish brown, but tergite of second segment yellowish in middle. Gland rods present on tergites 4 to 7, and rudiments on 3. Spermathecae 2 (and a rudimentary third), highly chitinized, oval, rather unequal, measuring in one specimen about 111 μ by 85 μ and 92 μ by 67 μ respectively; the duct chitinized for a short distance, about 7 μ .

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 2 ♀.

This species of *Palpomyia*, and the two which follow it, are closely related. They are dark brown or blackish insects with yellowish brown legs adorned with dark brown markings which differ only in degree. All three have similar wings, and agree in having only the fore femora armed. In *P. portali* sp. n. the thorax is dark brown, whereas it is blackish in the other two; and the dark brown band on the hind femora occupies about one-quarter of the length of the segment, whereas in the other two it is smaller, restricted to the tip. The most characteristic feature of *P. thomsoni* sp. n. is the greater thickening of the fore femora. That of *P. johnstoni* sp. n. the greater length of the antennae. They resemble in some respects the common European species *P. flavipes* (Mg), in which, however, the dark markings on the legs are more extensive, the four posterior femora being broadly dark at the tips, the dark band on the hind pair often covering half the segment.

***Palpomyia thomsoni* sp. n.**

This species resembles the preceding one, *Palpomyia portali* sp. n., closely, differing only in the following respects.

Antennae darker, the basal segments not paler at base. Thorax darker, blackish, shining, with dense fine pubescence and a rather larger tubercle. Legs with dark markings less extensive. Hind legs with femora dark brown at tips instead of over distal quarter, tibiae much paler in middle than at extremities, and tarsal segments not so dark. Femora of fore legs more distinctly thickened, at the widest part more than twice as thick as the tibia, and armed with about 13 spines, some of which, however, are very small. Abdomen with gland rods on tergites 5 to 7 only.

UGANDA: Ruwenzori, Kilembe, 4500 ft., 1 ♀, and Mobuku Valley, 4500 ft., 1 ♀; Fort Portal, 1 ♀.

***Palpomyia johnstoni* sp. n.**

This species also resembles closely *Palpomyia portali* sp. n. and the preceding species, but has much longer antennae. The chief differences are as follows.

Antennae dark brown, the basal segments paler at base; longer than in the two preceding species. Segments 4 to 10 sub-cylindrical, ranging from about 33 by 7 to 37 by 5-6 units; 11-14 cylindrical, 67-73 by 6-7 units; 15 about 79 by 6-7 units, without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 275, 230, and 365 units respectively. Thorax darker than in *P. portali*, blackish, shining, with a rather larger tubercle. Fine pubescence not so dense as in the preceding species. Legs with dark markings less extensive than in *P. portali*, as in the last species, but with femora of fore legs only slightly thickened and armed with only 6-8 spines. Abdomen with gland rods on tergites 4 to 7. Spermathecae two, highly chitinized, oval, sub-equal, about 145 μ by 100 μ ; the duct narrow, and chitinized at its commencement for about 8-9 μ .

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 1 ♀.

This insect resembles in some respects, *P. fuscipectus* Kieffer, a species found in Tunis, in which, however, according to Kieffer, there is no thoracic tubercle and the legs are otherwise adorned.

Palpomyia elgoni sp. n.

A dark brown species somewhat similar to the preceding one, but with the adornment of the legs less distinct, and without gland rods.

♀. Length of wings about 3.8 mm., greatest breadth about 1.1 mm.

Head blackish. Palpi almost black, the third segment not inflated, without a pit: lengths of last three segments about 27, 18, and 26 units respectively. Antennae almost black, the bases of the segments not paler: 4-10 sub-cylindrical, ranging from about 21 by 7.8 to 23 by 6-7 units; 11-14 cylindrical, sub-equal, about 45 by 7 units; 15 about 48 by 8 units, without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 190, 155, and 225 units respectively.

Thorax almost black. Anterior tubercle small, pointed. Scutellum almost black.

Wings brown, especially anteriorly and at tip, but without distinct adornment. No macrotrichia. Venation as in the preceding species. Halteres with dark brown knobs.

Legs dull brown. All coxae and knees dark brown. Femora on fore legs a little thicker than others, yellowish brown, armed with 13 spines; on other legs dull brown with apical quarter infuscated but without a clearly marked band, unarmed. Tibiae on all legs dull brown, darkest at apex, but without clear bands. T.R. about 2. All tarsal segments more or less infuscated. Fourth tarsal segments on all legs cordiform, fifth unarmed, and claws small, equal apparently without barbs.

Abdomen dull, darkish brown. No gland rods. Spermathecae 2, highly chitinized, oval, sub-equal, about 78μ by 56μ ; practically no part of the duct chitinized.

KENYA: Mt. Elgon, Heath Zone, 10,500–11,500 ft., ii.1935, 1 ♀.

Palpomyia ruwenzorii sp. n.

A dark brown or blackish species with the legs mainly yellowish brown, but the tibiae narrowly dark brown at base and apex at least. All femora armed with spines.

♀. Length of wing nearly 2·5 mm., greatest breadth nearly 0·8 mm.

Head blackish. Palpi blackish, the third segment not inflated, without a pit: lengths of last three segments about 24, 16, and 26 units respectively. Antennae dark brown, but bases of segments 3–9 paler, yellowish: 4–10 sub-cylindrical, sub-equal, about 17 by 7–8 to 16 by 6–7 units; 11–14 elongate, successively longer, from about 41 to 47 by 5–6 units; 15 about 52 by 5–6 units, without stylet. The combined lengths of segments 3–10, 4–10, and 11–15 about 141, 114, and 229 units respectively.

Thorax blackish, shining. Anterior tubercle present, rather small. Scutellum blackish.

Wings pale, with slight infuscation over radial areas; without macrotrichia. Costa extending nearly four-fifths length of wing, terminating at a level about midway between the ends of *M₂* and *Cu₁*. Both radial cells well formed: first more or less rectangular, second not quite three times as long as first. Fork of *M* slightly proximal to cross-vein, the distance between it and the cross-vein about the same as the length of the cross-vein. Fork of *Cu* slightly distal to that of *M* and the cross-vein. Halteres with blackish knobs.

Legs mainly yellowish brown, with all coxae, knees, and terminal segments of tarsi dark brown. All femora yellowish brown, excepting at extreme apex, where they are dark brown, those on fore and hind legs slightly thickened. All femora armed: about 15, 4–5, and 3–4 spines on fore, middle, and hind pairs respectively. All tibiae narrowly dark brown at base and apex, those on fore legs with middle portion also infuscated. T.R. nearly 2·5. On all legs fourth tarsal segment cordiform, and fifth unarmed. Claws on all legs rather small, equal, and barbed.

Abdomen very dark brown above. Gland rods present on tergites 4 to 7. Spermathecae 2, highly chitinized, oval, rather unequal, about $50–60 \mu$ by $40–50 \mu$; the duct chitinized for only a short distance, about 5μ .

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 1 ♀, and Fort Portal, 4.xii.1934, 1 ♀.

Palpomyia namwambae sp. n.

A dark brown insect resembling the preceding species, but larger, and showing some small differences in the proportions of the antennal segments and the venation of the wings as indicated below.

♀. Length of wing about 4 mm., greatest breath about 1·25 mm.

Head very dark. Palpi blackish, the third segment not inflated, without a pit: lengths of last three segments about 33, 20, and 30 units respectively. Antennae dark brown, but bases of segments 3-10 paler, yellowish: 4-10 sub-cylindrical, sub-equal, about 20 by 8-9 units, the middle ones slightly shorter than the others; 11-14 elongate, sub-equal, about 70-72 by 6-8 units; 15 about 77 by 5-8 units, without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 176, 140, and 361 units respectively.

Thorax blackish, shining. Anterior tubercle small. Scutellum almost black.

Wings hardly at all infuscated, the radial veins not so dark as usual, yellowish; without macrotrichia. Costa extending about five-sixths length of wing, terminating at about same level as end of M_2 . Both radial cells large; first more or less rectangular, second rather narrow distally, about twice as long as first. Fork of M a little proximal to cross-vein, the distance from it to the cross-vein slightly greater than the length of the cross-vein. Fork of Cu at about same level as that of M . Halteres with whitish knobs.

Legs mainly yellowish brown, with knees and last three tarsal segments dark brown. All femora yellowish brown excepting at extreme apex which is dark, those on the fore legs very little thicker than the others. All femora armed with spines, about 8, 5, and 6 on fore, middle, and hind legs respectively. All tibiae narrowly dark brown at base and apex, those on fore legs with middle portion also somewhat infuscated. T.R. about 2·5. On all legs fourth tarsal segment cordiform, and fifth unarmed. Claws on all legs rather large, equal, and barbed.

Abdomen very dark above. Gland rods present on tergites 4 to 7. Spermathecae 2, highly chitinized, oval, relatively small, about 70 μ by 60 μ ; the commencement of the duct chitinized for a short distance, about 10 μ .

UGANDA: Ruwenzori, Namwamba Valley, 6500 ft., 1 ♀.

Pellucidomyia gen. nov.

For the insect described below, which in some respects links *Calyptomyia* with *Bezzia*, it is necessary to erect a new genus which has the following characters:—thorax produced anteriorly, conical, wings with venation similar to that of *Bezzia*, but without microtrichia. Femora unarmed, not thickened. Fourth tarsal segments on four anterior legs cordiform, fifth unarmed. Hind

* 1, 4b

legs extremely long and slender, with all the tarsal segments long and cylindrical. Claws on the four anterior legs two, equal, rather more than half the length of the last tarsal segment, without barbs; those on the hind legs single, as long as the last tarsal segment (that is very long), without barbs.

In two other genera, *Ceratopogon* and *Diaphanobezzia*, the wings are or may be devoid of microtrichia, but in other respects they differ from this new genus widely. The type of the genus is the following species:

Pellucidomyia ugandae n. sp.

An almost black species with the wings devoid of microtrichia, and the hind legs very long, terminating in a single, very long claw.

♀. Length of wing about 2·8 mm., greatest breadth about 0·9 mm.

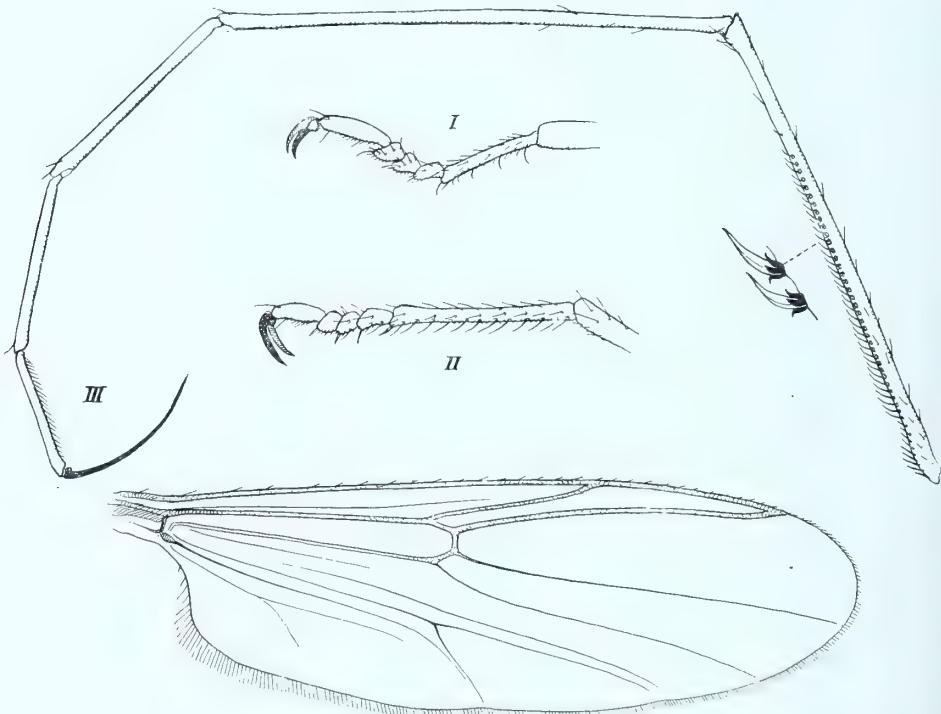


Fig. 10.—*Pellucidomyia ugandae*, gen. et sp. n.
Tarsi (to same scale) of fore, mid and hind legs (I, II, III), and wing of female

Head almost black, flattened antero-posteriorly. Eyes bare. Palpi blackish short, the third segment not inflated, without a pit: lengths of last three segments about 16, 14, and 17 units respectively. Antennae with torus yellowish brown, segment 3 almost black, 4 to 10 pale at base but somewhat infuscated at apex, and 11-15 dark brown: segments 4-10 sub-cylindrical, ranging from

16 by 8 to 17 by 6 units; 11-15 sub-equal, 65-71 by 5-6 units, the last without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 143, 113, and 342 units respectively.

Thorax almost black, dull, not shining, very sparsely clothed with short hairs. Anterior margin prolonged, conical, but hardly projects over the head. No anterior spine or tubercle. Scutellum black, bearing a few small hairs.

Wings (Fig. 10) pale, with a blue iridescence; similar to those of species of the genus *Bezzia*, not especially long and narrow, with rounded tip. There are neither macrotrichia nor microtrichia, and the costa bears only a few short and widely separated bristles. Fringe short. Anterior veins pale yellowish, others colourless. Costa extending about seven-eighths length of wing, well separated from radial veins, and terminating at about the same level as end of M_2 . Only a single radial cell which is not very narrow. Cross-vein vertical, proximal to the middle of the wing, not very long. Fork of M proximal to cross-vein, the distance from it to the cross-vein about the same as the length of the cross-vein. Fork of Cu at about same level as that of M . Anal angle well formed, about a right-angle. Halteres with blackish knobs.

Legs yellowish brown, the hind pair with a narrow dark brown band a short distance before the apex of the femora, and another at the apex of the tibiae. All femora unarmed; the two anterior pairs little if at all thickened at apex, the hind pair slender. Fore legs short, the tarsal segments short, fourth cordiform, fifth somewhat inflated, unarmed, the claws rather long, equal, without barbs. Middle legs not very long, the tarsal segments short, fourth cordiform, fifth unarmed (not inflated), the claws rather long, equal, without barbs. Hind legs extremely long (about three and a half times as long as the fore legs), especially the tarsal segments which are all dark brown, very long, cylindrical, and slender, the fifth unarmed, with a single very long claw (as long as the fifth segment) without barb. T.R. nearly 1. First tarsal segment on hind legs about four-fifths length of tibia.

Abdomen blackish, narrowed at base. No gland rods. Hairs scanty and small, but on ventral aspect of eighth segment is a tuft of rather long bristles on each side of middle line. Spermathecae 2, highly chitinized, collapsed in the specimens examined but probably oval and measuring about 105 μ by 95 μ ; the commencement of the duct chitinized for a short distance, about 5 μ .

UGANDA: Mbarara, 15.xi.1934, 2 ♀.

***Nilobezzia (Parrotia) spekei* sp. n.**

A dark brown species with the legs mainly yellowish brown, but with the tibiae of the hind pair dark brown.

♀ Length of wing about 2.3 mm., greatest breadth about 0.7 mm.

Head dark brown. Eyes bare. Palpi dark brown, the third segment not

inflated, without a pit: lengths of last three segments about 20, 11, and 13 units respectively. Antennae uniformly darkish brown: segments 4-10 not paler at base, from sub-cylindrical to vasiform, ranging from about 17 by 6 to 21 by 5 (maximum) units; 11-14 elongate, sub-equal, 26-30 by 5-6 units; 15 about 36 by 5 units, without stylet. The combined lengths of segments 3-10, 4-10, and 11-15 about 146, 120, and 152 units respectively.

Thorax dark chestnut brown, densely clothed with very short hairs. Anterior tubercle very small, rudimentary. Scutellum about same colour as scutum, bearing a few dark bristles.

Wings brownish, especially anteriorly; without macrotrichia. Costa extending fully seven-eighths length of wing, terminating at about the same level as end of M_2 . The single radial cell well formed. Fork of M a little proximal to cross-vein, the distance from it to the cross-vein about the same as the length of the cross-vein. Fork of Cu at about same level as that of M . Tip of wing rounded. Anal angle wide, not rectangular. Fringe short, composed of alternating short and shorter hairs. Halteres with dark brown knobs.

Legs mainly yellowish brown, all knees and terminal segments of tarsi dark brown. Four anterior legs with femora and tibiae yellowish brown excepting actual knees and extreme apex of tibiae which are darker; hind legs with extreme apex of femora and whole length of tibiae dark brown. Femora and tibiae slender, not thickened, unarmed with spines or especially strong bristles. T.R. about 2.4. Fourth tarsal segments short but not cordiform; fifth armed with about 4 pairs of spines which, however, are long and pointed, and do not greatly differ from bristles. Claws on all legs about half length of last tarsal segment, equal, barbed.

Abdomen dark chestnut-brown above and at tip. Gland rods present on tergites 3 to 7, all reaching to base of abdomen, the distal ones therefore very long. Spermathecae 2, highly chitinized, small, oval, sub-equal, about 50 μ by 40 μ ; the duct chitinized at its commencement for only a short distance, about 7 μ .

UGANDA: Ruwenzori, Mobuku Valley, 4500 ft., xii.1934, 1 ♀.

A P P E N D I X

A NEW SUB-GENUS OF CERATOPOGON

By B. DE MEILLON, D.Sc.

(*South African Institute for Medical Research, Johannesburg*)

Two species of Ceratopogonidae recently found by me in Zululand do not conform with the accepted definition of any known genus of this family, though they resemble *Ceratopogon* (Mg.) Edw. and *Alluaudomyia* Kieff. in the reduction of the microtrichia of the wings, distinct humeral pits, and somewhat unequal hind claws of the female. I propose to regard them as forming a new subgenus of *Ceratopogon*. Dr. J. W. S. Macfie, who has examined specimens, thinks that they might with equal propriety be placed in the genus *Alluaudomyia*, as he does not attach great significance to the peculiarity of the loss of the second radial cell.

The genus *Ceratopogon* has been said to be characterized by the lack of microtrichia on the wings. I have however mounted a wing of the European *C. sociabilis* Goet. and under a high magnification (circa 400) had no difficulty in detecting small erect microtrichia, showing most clearly at the edges of the large veins and along the margin of the wing. This condition is exactly as in my *C. (C.) natalensis* (1937) and in the two new species described below.

Culicoides imperfectus Goet., 1935, described from a female from Mt. Niramongo, Kivu District, is figured as having a wing-venation similar to that of the two new species here described, and may belong to the same group. It differs in having more numerous macrotrichia.

Ceratopogon Mg.

Fanthamia subg. nov.

As in the subgenus *Ceratopogon* s. str., but with the second radial cell absent and the terminal antennal segments short in both sexes.

The condition of the radial cells in *Ceratopogon* is rather variable. In the subgenus *Brachypogon* there are no radial cells at all as also in *C. minima* Kieff. In *saltivagus* Skuse—I have not been able to consult the original description—there is said to be only one radial cell and in *perennans* Edws. the costa is so

swollen that the second radial cell is almost entirely obliterated. In the two species described below the absence of the second radial cell is due to the complete fusion of the 1st and 3rd veins and not merely to thickening of the costa. The terminal antennal segments too are unlike those of the subgenus *Ceratopogon*. These characters being constant in two insects so dissimilar specifically as those described below warrants the erection of a new subgenus if not a new genus.

This subgenus is respectfully named in honour of my former Professor, the late Dr. H. B. Fantham. Sub-genotype, *C. (F.) adulator* sp. n.

Ceratopogon (Fanthamia) adulator sp. n.

♂. A minute insect without any conspicuous markings.

Wing length. 0·66 mm., greatest width 0·3 mm.

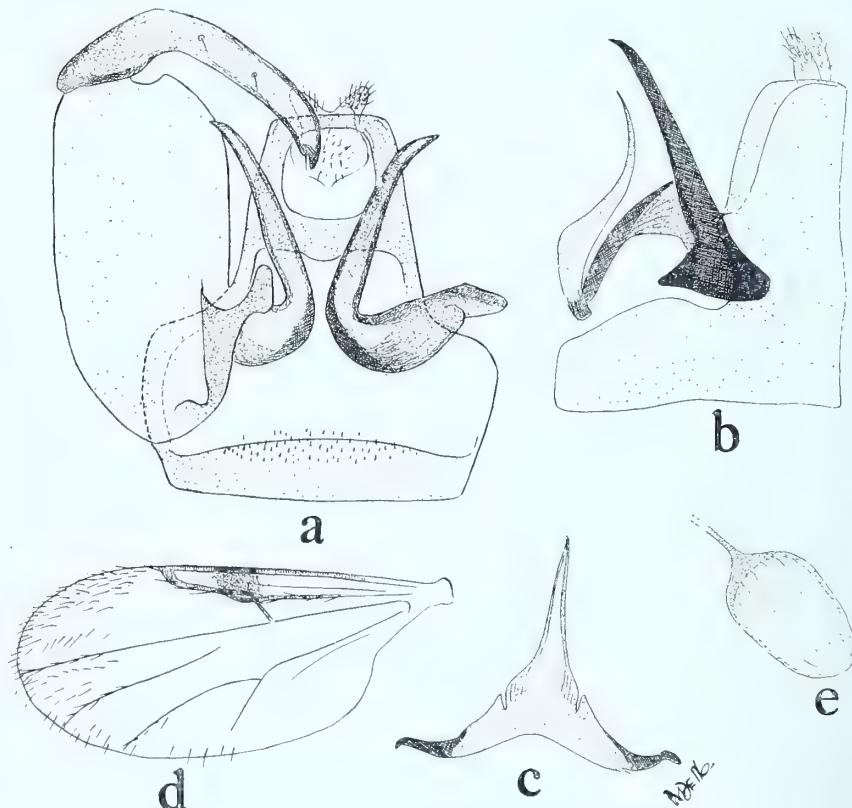


Fig. 11.—*Ceratopogon (Fanthamia subg. n.) adulator* sp. n.
(a-c) ♂ terminalia: (a) ventral view (aedeagus not shown); (b) side view of tergite, parameres and aedeagus; (c) aedeagus; (d) ♀ wing (fringe not shown); (e) spermatheca.

Head. Vertex dark brown; mouth parts light brown; eyes widely separated above, moderately hairy.

Palps. Minute measuring in all 60 μ ; five segmented with none of the segments elongated or swollen, apparently no sensory pit.

Antennae. Tori very dark brown, rest light brown, none of the segments unduly elongate, panache absent, hairs very short, not arranged in rows or whorls; segments 4-10 more or less flask-shaped, 11-15, of even width throughout; the relative lengths and widths of the individual segments are:

Segment	..	..	3	4-5	6-10	11-12	13-14	15
Length	..	..	7	6	5	7	6	8
Width	..	..	4	3	2	3	3	3

Mesonotum. Dark brown, somewhat shiny with a few pale hairs and some black bristles above the wing roots; humeral pits small.

Scutellum. Slightly darker than the mesonotum with three central bristles and one lateral on each side.

Halteres. With creamy knobs and slightly darker stalks.

Legs. Hind femora slightly darkened, rest straw-coloured; all leg segments without any heavy spines but first hind tarsus with a closely set row of colourless spines along the anterior border; hind femur, tibia and first tarsus somewhat swollen; fourth tarsus somewhat heart-shaped; all claws small and equal; first hind tarsus slightly shorter than on other legs, twice the length of the second hind tarsus.

Wings. With a few macrotrichia apically, otherwise bare; costa reaches two-thirds of the wing length; lower branch of the median narrowly interrupted basally and lower branch of the cubitus broadly interrupted apically; fork of the cubitus just beyond the cross vein; there is a rather prominent black spot which covers the first radial cell and a portion of the costa; second radial cell absent; alula apparently bare.

Abdomen. Dark brown, almost bare.

Terminalia (Figs. 11, *a*, *b* and *c*). Very dark brown; sternite X short with a few small spiracles, tergite elongated without any very long bristles, narrowing suddenly just before the middle with no apical lateral processes but with two small median lobes, very well pigmented; side-pieces large, claspers bent almost at right angles before the middle; parameres large and well pigmented, separated, acutely bent before the middle, tapering to a sharp termination and enlarged basally; aedeagus moderately well pigmented broad basally with two long basal arms and suddenly narrowing apically to end in sharp point—the structure of the parameres and related parts will best be understood from the figures giving ventral and side views.

Colouration as in the male; wing (Fig. 11, *i*), as in the male but slightly

longer measuring 0·74 mm., and with macrotrichia much more dense apically; eyes widely separated slightly hairy; antennae and palps as in the male, the antennal segments are very slightly longer otherwise there is nothing to tell the female from the male head; legs as in the male but hind claws much enlarged and unequal the longer digit exceeding tarsus V in length and the shorter about half the length of that segment; spermathecae (Fig. 11, e), two, highly pigmented, more or less ovoid but slightly wider apically, one slightly larger than the other as follows: $56 \mu \times 32 \mu$ and $40 \mu \times 24 \mu$, duct in each case pigmented for a distance of at least 16μ .

ZULULAND: Eshowe, 7.i.38, 3 ♂ 7 ♀ at light. Type ♂ in the British Museum, allotype in Johannesburg.

Ceratopogon (Fanthamia) ornatipennis sp. n.

♀. A small insect with conspicuously marked wings reminiscent of *Culicoides*.

Wing length. 1·2 mm. greatest width 0·5 mm.

Head. Vertex dark brown, clypeus and mouth parts brown; eyes very widely separated above, almost bare.

Palps. Small, none of the segments elongated or enlarged, third segment with a small sensory pit

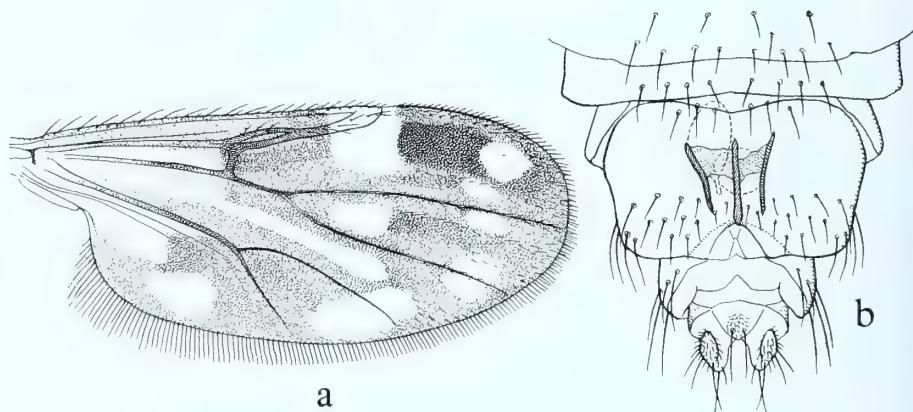


Fig. 12.—*Ceratopogon (Fanthamia) ornatipennis* de Meillon

(a) wing of female; (b) ventral view of posterior extremity of abdomen of female.

Drawn from Ruwenzori specimen. (See p. 80).

Antennae. Tori dark brown, rest of the segments brown; as in the foregoing species none of the segments are unduly elongated; the relative lengths and widths of the individual antennal segments are:

Segment	..	3	4-8	9-10	11	12	13	14	15
Length	..	12	10	10	13	12	13	12	15
Width	..	5	4	3	4	4	4	4	4

Mesonotum. Sides dark brown, front grey continued as a broad grey band gradually widening to end having about the same width as the scutellum; with fairly numerous yellowish hairs and some large black bristles; humeral pits conspicuous.

Scutellum. Dark brown in the middle and greyish brown laterally, with one central and a marginal bristle on each side.

Halteres. With creamy knobs and slightly darker stalks.

Pleurae. Dark brown.

Legs. Coxae very dark brown, shiny; femora very dark brown especially the hind pair which are somewhat swollen; tibiae dark brown slightly paler basally and apically especially the hind pair which are also somewhat swollen; fore and mid tarsi light brown, hind tarsi slightly darker; all leg segments without any heavy spines but first hind tarsus with a closely set row of colourless spines along the anterior border; fourth tarsi more or less heart-shaped; claws small and equal on the fore and mid legs, large and unequal on the hind legs the longer digit being nearly as long as the fifth tarsus and the smaller about half the length of that segment.

Wings. (Fig. 12a). Conspicuously ornamented with light and dark markings as follows: a dark patch over the radial cell involving the costa, another just beyond the end of the costa, another between the branches of the median and one apically between M_2 and Cu_1 ; pale areas are present as follows: a prominent one involving the end of the costa and extending slightly beyond it, a small one slightly beyond, one on M_1 near its apex, one on M_2 at its apex, one on Cu_1 at its apex and a small one in the anal cell; macrotrichia fairly numerous apically; costa reaches two-thirds of the wing length; second radial cell absent; base of M_2 narrowly interrupted; apex of Cu_2 broadly interrupted.

Abdomen. Dark brown, somewhat shiny, almost bare, two small black spots on each tergite.

Spermathecae. Two, of the same type as in *adulator* sp. n., slightly unequal, measuring 80 μ - 48 μ and 64 μ - 36 μ , duct pigmented for a distance of 24 μ in each case.

ZULULAND: Eshowe, 7.i.38, 3 ♀ at light. Type in Johannesburg.

Plate XXV

RUWENZORI

Namwamba Valley : glade in heath forest at 10,200 feet, with *Lobelia bequaertii*
Habitat of *Forcipomyia iphias* de Meillon





Plate XXVI
River Ruizi near Mbarara, Southern Uganda
Habitat of *Pellucidomyia ugandae* Macfie





